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एलपीजी के साथ उपयोग के लिए गर्म  
भोजन कैबिनेट — विशिष्टि  
( पहला पुनरीक्षण )

Hot Food Cabinets for use with  
LPG — Specification  
( First Revision )

ICS 27.060.10

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## FOREWORD

This Indian Standard (First revision) was adopted by the Bureau of Indian Standards after the draft finalized by the Domestic and Commercial Gas Burning Appliances (Pressure Type) Sectional Committee had been approved by the Mechanical Engineering Division Council.

This standard is one of a series of Indian Standards on various domestic and commercial gas-burning appliances (pressure type) used with liquefied petroleum gases. IS 5116 : 2020 is a necessary adjunct to this standard should, however, any deviation exist between the requirements given in IS 5116 : 2020 and those of this standard, provisions of the latter shall apply.

Compliance with this standard does not by itself guarantee that satisfactory service will be attained. Conditions of use vary greatly and it is necessary to relate the standards of performance to the actual use to which the appliance will be subjected during its life.

This standard was first published in 1970. This standard is being revised again to keep pace with the latest technological developments and international practices. Also, in this revision, the standard has been brought into the latest style and format of Indian Standards, and references to Indian Standards, wherever applicable have been updated. BIS certification marking clause has been modified to align with the revised *Bureau of Indian Standards Act*, 2016.

The composition of the committee responsible for the formulation of this standard is listed in Annex D.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded-off value should be the same as that of the specified value in this standard.

# Indian Standard

## HOT FOOD CABINETS FOR USE WITH LPG — SPECIFICATION

( First Revision )

### 1 SCOPE

This standard specifies the constructional and performance requirements of hot food cabinets for use with liquefied petroleum gases at a working pressure of 30 gf/cm<sup>2</sup>, designed to maintain the temperatures as follows:

- |                       |   |
|-----------------------|---|
| a) Without heated top | Hot food cabinet temperature – 80 °C (average) Top temperature – below 55 °C (average); and |
| b) With heated top    | Hot food cabinet temperature – 80 °C (average) Top temperature – above 55 °C (average).     |

### 2 REFERENCES

The standards listed below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. In case the standards are to be referred in this clause they are to be listed as below:

<i>IS No.</i>	<i>Title</i>
IS 5116 : 2020	Domestic and Commercial Equipment for use with LPG — General Requirements ( <i>fourth revision</i> )
IS 6480 : 1988	Glossary of terms relating to domestic and commercial gas-burning appliances ( <i>first revision</i> )

### 3 TERMINOLOGY

For the purpose of this standard, the following definitions, in addition to those given in IS 6480 shall apply.

#### 3.1 Hot Food Cabinets Warming Space

The total of the space, in cubic metres, in all compartments that can be usefully employed for stacking plates.

#### 3.2 Heated Top Area

This should be interpreted as a purpose-built area in square metre on the top of the hot food cabinets.

### 4 MATERIAL

The relevant requirements for materials given in Section 1 of IS 5116 shall apply.

### 5 CONSTRUCTION

In addition to the relevant constructional requirements given in Section 1 of IS 5116, the requirements given in 5.1 to 5.4 shall apply.

**5.1** The design shall facilitate the cleaning of spillage from the base and door runners.

**5.2** Sliding doors shall not be dislodged during opening or closing.

**5.3** Where no thermostat is fitted, the burner flames shall not be permanently lit back or extinguished due to the opening and closing of any doors on the appliance when the gas tap is adjusted to give the temperature maintenance gas rate defined thereunder. Individual burner flames shall cross-light at a full gas rate and be stable at the temperature maintenance gas rate.

**5.4** The fixed-setting thermostat shall be set within  $\pm 5$  °C of the nominal working temperature.

### 6 PERFORMANCE

In addition to the relevant performance requirements specified in Section 2 of IS 5116, the requirements given in 6.1 to 6.5 shall apply.

#### 6.1 Combustion

When sampled as detailed in 6.1.1, the CO/CO<sub>2</sub> ratio shall not exceed 0.02 percent with individually heated sections operating alone and also in conjunction with associated units.

**6.1.1** The variable thermostat shall be set at its maximum setting, the gas lighted and doors closed. A sample of the products of combustion shall be taken from the flue outlet after 15 minutes.

#### 6.2 Heating Test

When tested as given in Annex A, the hot food cabinet temperature shall rise through 65 °C within

45 minutes and the average temperature of the top, if heated, shall rise through 40 °C in 45 minutes.

### 6.3 Temperature Distribution Test

When tested according to Annex B the temperature at any checkpoint shall not differ by more than  $\pm 8$  °C from the mean within the hot food cabinet. In case of a heated top, the temperature at any checkpoint on the top shall not differ by more than 8 °C from the mean.

### 6.4 Temperature Maintenance Test

When tested according to Annex C the hourly heat input required per cubic metre of warming space to maintain a temperature of 65 °C above room temperature shall be as follows:

For fully insulated hot food cabinets  $\frac{120}{\sqrt[3]{V}}$  kcal/h

For partly insulated hot food cabinets (for example for, heated top)  $\frac{140}{\sqrt[3]{V}}$  kcal/h

For hot food cabinets having no insulation  $\frac{160}{\sqrt[3]{V}}$  kcal/h

Where  $V$  is the volume of warming space in cubic metres.

For hot food cabinets with a heated top, add  $60 A/V$  to each of the above formulae, where  $A$  is the area of the heated top in square metres.

**6.5** Temperature readings shall be taken as given in **6.5.1** to **6.5.2**.

**6.5.1** Hot food cabinet temperature readings shall be taken by means of a thermocouple placed in the centre of a 5 cm diameter blackened copper sphere,

in each compartment which is bounded above and below by the top, the shelf or the bottom. The position on which the readings are taken shall be in the vertical plane of each compartment which is parallel to the width and midway between back and the front compartment at one-sixth, three-sixths and five-sixths of the horizontal central line of the plane.

**6.5.2** Heated top temperatures shall be measured by means of a thermocouple or surface pyrometer at three positions, midway from front to rear and at one-sixth, three-sixths and five-sixths of the width.

## 7 INSTRUCTIONS

The hot food cabinets shall be supplied with the instructions given in **24** of IS 5116.

## 8 MARKING

**8.1** The requirements given in **24** of IS 5116 shall apply.

### 8.2 BIS Certification Marking.

The Hot food cabinets may also be marked with Standard Mark.

**8.2.1** The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act, 2016* and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

## 9 PACKING

**9.1** The requirements given in **25** of IS 5116 shall apply.

## ANNEX A (Clause 6.2)

### HEATING TEST

#### A-1 OBJECT

**A-1.1** To determine the time required for the hot food cabinet average temperature to rise 65 °C above the room temperature and, if with a heated top, the time required for this section to rise 40 °C above room temperature using Test Gas A.

maximum setting and turn the gas tap full 'ON'. Measure the temperature as described in 6.5 and note the time taken to reach an average hot food cabinet temperature of 75 °C and an average heated top temperature to of 59 °C. Assess from a graph the time required for the average temperature to rise 65 °C and, if, with a heated top, the time required for this section to rise 40 °C.

#### A-2 PROCEDURE

**A-2.1** Turn the thermostat, unless fixed, to its maximum

## ANNEX B (Clause 6.3)

### TEMPERATURE DISTRIBUTION TEST

#### B-1 OBJECT

**B-1.1** To determine the evenness of temperature throughout the warming space and the heated top area using Test Gas A.

tap full 'ON' and any thermostat set to maintain an average temperature of  $(80 \pm 5)$  °C, light the gas. Allow the appliance to heat up and, if no thermostat is fitted, adjust the gas rate to maintenance as soon as this temperature is reached. Measure temperatures as described in 6.5 when steady.

#### B-2 PROCEDURE

**B-2.1** Cover all shelves with a single layer of 240 mm to 250 mm dia dinner plates. With the gas

The thermostat setting and gas rate to maintain approximately steady temperatures should be determined beforehand.

## ANNEX C (Clause 6.4)

### TEMPERATURE MAINTENANCE TEST WITHOUT HEATED TOP

#### C-1 OBJECT

**C-1.1** To determine the hourly heat input required per cubic metre of warming space to maintain a rise of 65 °C above room temperature using test gas A.

the test at various temperatures. Plot maintenance gas rate in kcal/h against temperature rise and obtain by interpolation the gas rate corresponding to a temperature rise of 65 °C above room temperature. Divide the figure obtained by the volume of warming space in cubic metres to give the hourly heating rate of 1 per cubic metre of warming space, required to maintain temperature.

#### C-2 PROCEDURE

**C-2.1** Proceed as described in Annex B but repeat

**ANNEX D**  
(Foreword)

**COMMITTEE COMPOSITION**

Domestic and Commercial Gas Burning Appliances Sectional Committee, MED 23

<i>Organization</i>	<i>Representative(s)</i>
L.P.G. Equipment Research Centre, Bengaluru	SHRI ASHISH BERA ( <b>Chairperson</b> )
Agnisumukh, Bengaluru	SHRI HARI RAO
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Bharat Petroleum Corporation Limited, Mumbai	SHRI SUDIPTA SARKAR SHRI MOHIT RANE ( <i>Alternate</i> )
Bureau of Energy Efficiency, New Delhi	MS PRAVATANALINI SAMA SHRI KAMRAN SHAIKH ( <i>Alternate</i> )
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Indian Institute of Technology Guwahati, Guwahati	SHRI MUTHU KUMAR
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Shri Krishna Test House, New Delhi	SHRI SUNIL TALWAR

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*Member Secretary*  
SHRI SANDEEP KESHAV  
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### Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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